The Examiner has rejected claims 1 and 4-6 under 35 U.S.C. 102(b) as being anticipated by the Filippi, et. al. reference (U.S. Patent No. 5,883,301). It is respectfully submitted that a review of this reference reveals that it does not anticipate, disclose, suggest or make obvious the Applicants' invention. The Applicants' invention is directed to an apparatus and method for testing the integrity of vehicular fuel tanks. As such, the Applicants' invention includes a microprocessor that allows an external pressure source, such as a compressed nitrogen supply, to pressurize the fuel tank to a first pressure level. Once pressure stabilization has been achieved within the fuel tank, the external pressure source and a reference orifice contained within the tester are closed allowing the pressure within the tank to decay, if a leak is present within the tank. If no leaks are present within the fuel tank, the tank passes the test. If, however, a large leak is present in the fuel tank, the pressure within the tank decays rapidly and the fuel tank fails the test. If a relatively small fuel tank leak exists, the fuel tank is repressurized by the external pressure source and a test is performed comparing the time required for the pressure within the tank to decay from a first pressure level to a second pressure level through both the leak and the reference orifice contained within the tester to the time required for such a pressure decay to occur through only the leak. By utilizing the ratio of the time required for the pressure within the tank to decay from a first pressure level to a second pressure level when only the leak within the tank is present and the time required for same to occur when both the leak within the tank and the reference orifice within the tester are present, a determination can be make whether the leak is of such a size that it is acceptable.

The Filippi, et. al. reference (U.S. Patent No. 5,883,301) discloses a gasoline line leak detection system. As such, the apparatus disclosed in this reference is utilized to detect leaks in the piping between a underground fuel storage tank in a gas station and the fuel dispenser on the gas pump. In contrast, the Applicants' invention is used for testing the evaporative fuel system on a vehicle. The calibrated leak shown in the Filippi, et. al. reference is used only as part of the installation process for the underground fuel storage tank and fuel dispenser on the gas pump to calibrate the overall system for subsequent leaks. Once calibration has been completed, the calibrated leak is removed from the system. The calibrated leak is not included as part of the permanent testing apparatus used to make actual day to day measurements. The reference orifice 23 referred to by the Examiner in the Filippi, et. al. reference is actually a leak which exists in the pipeline which interconnects fuel storage tank 20 to the fuel dispenser 12. In contrast, in the Applicants' invention, the fuel tank tester includes a built-in reference orifice and means to open and close this orifice thus allowing the user to effectively calibrate the tester as part of every test. Thus, the tests performed using the Applicants' tester are dynamic tests since the tester compensates for actual test conditions. In contrast, the tests performed by the Filippi, et al device are static tests since a leak which may exist in the piping is compared to a calibrated leak which was utilized at the time of installation of the underground fuel storage tank and the fuel dispenser and no compensation is provided in the Filippi, et. al. reference for changes in actual test conditions. It should also be noted that the Filippi, et. al. reference assumes that no leaks are present at the time of installation of the fuel storage

tank and the fuel dispenser, and thus, assumes that the only leak that is present is through the calibrated leak at the time of installation of the storage tank and the fuel dispenser. This may not be the case since leaks can be easily introduced into the system during system installation.

As previously stated, the Applicants' invention determines the time required for the pressure within the fuel tank to decay, between predetermined pressure levels, through any leaks which might exist in the fuel tank and the time required for the pressure within the fuel tank to decay, between predetermined pressure levels, through the combination of any leaks which might exist in the fuel tank and a reference orifice contained within the tester, and then compares these times with predetermined time values. In addition to the aforementioned structural differences between the apparatus disclosed in the Filippi, et. al. reference and the Applicants' invention, the Filippi, et. al. reference does not determine the time required for the pressure within the fuel tank to decay, between predetermined pressure levels, through the combination of any leaks which might exist in the fuel tank and a reference orifice, since a reference orifice is not present during the testing procedure utilized by the Filippi, et. al. reference. A calibration or reference orifice is utilized during the initial installation of the underground fuel storage tank and fuel dispenser in the Filippi, et. al. reference, however, the calibration or reference orifice is removed after system installation and thus not utilized for any future tests. In view of the foregoing differences, it is respectfully submitted that the Filippi, et. al. reference does not anticipate, disclose, suggest or make obvious the Applicants' invention and that the Applicants' invention is

patentable thereover. However, in order to more fully define the Applicants' invention, independent claim 1 has been amended to specifically state that the time determining means measures the time required for the pressure within the fuel tank to decay, between predetermined pressure levels, through any leaks which might exist in the fuel tank and the time required for the pressure within the fuel tank to decay, between predetermined pressure levels, through the combination of any leaks which might exist in the fuel tank and the reference orifice.

The Examiner has rejected claim 9 under 35 U.S.C. 103(a) as being unpatentable over the Kammeraad, et. al. reference (U.S. Patent No. 5,507,176) in view of the Dodge reference (U.S. Patent No. 4,575,807) and has also rejected claims 9 and 10 under 35 U.S.C. 103(a) as being unpatentable over the Filippi, et. al. reference (U.S. Patent No. 5,883,301) in view of the Dodge reference (U.S. Patent No. 4,575,807). It is respectfully submitted that a review of these references, taken individually or in combination, reveals that they do not disclose, suggest, or make obvious the Applicants' invention. The Kammeraad, et. al. reference discloses an evaporative emissions test apparatus that connects to a fuel cap and a fuel filler neck. In contrast, the Applicant's invention is not connected to the fuel vehicle cap. In addition, the apparatus disclosed in the Kammeraad, et. al. reference does not utilize a reference orifice and means to open and close the reference orifice for comparison of pressure decay rates. Furthermore, the Kammeraad, et. al. apparatus utilizes an acceptable pressure drop over a fixed period of time. The Applicants' invention does not utilize any fixed period of time to determine pressure drops but rather compares

pressure drop measurements on a ratio basis. The Dodge reference (U.S. Patent No. 4,575,807) is directed to a method and apparatus for determining a leakage rate in a vehicle transmission. In contrast, the Applicants' invention is used to determine leakage rates in the evaporative fuel system on a vehicle, and thus, the Dodge reference discloses non-analogous art. In addition, the apparatus disclosed in the Dodge reference does not utilize a reference orifice and means to open and close the orifice for comparison of pressure decay rates. In view of the foregoing structural and operational differences between these references and the Applicants' invention and the fact that the Dodge reference discloses non-analogous art, it is respectfully submitted that it is not obvious to combine the teachings of the Dodge, et. al. reference with either the Kammeraad, et. al. reference or the Filippi, et. al. reference, and that the Applicants' invention is patentable thereover. However, in order to more specifically define the Applicants' invention, claims 9 and 10 have been amended to more specifically recite that the time required for the pressure within the fuel tank to decay, between predetermined pressure levels, through any leaks which might exist in the fuel tank and the time required for the pressure within the fuel tank to decay, between predetermined pressure levels, through the combination of any leaks which might exist in the fuel tank and a reference orifice are determined and that the ratio of these times is subsequently compared to a standard ratio to determine whether the fuel tank has an acceptable leakage rate.

Attached hereto is a "marked-up" version of the revised claims. The revised claims are shown as they were submitted under the previous Amendment, dated July 24, 2002, with the revisions made by the present Amendment shown hand printed.

In view of this Amendment, it is respectfully submitted that the above application is in condition for allowance, and such action is requested.

Respectfully submitted,

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1. (Amended) A fuel tank tester utilizing an external source of pressure for testing purposes comprising means for connecting the external source of pressure to said fuel tank tester, means for connecting said fuel tank tester to the fuel tank being tested, means for determining the pressure within the fuel tank being tested, a reference orifice, means for directing gas from the fuel tank to said reference orifice, means for determining the time required for the pressure within the fuel tank to decay between predetermined pressure levels and the time required for the pressure within the fuel tank to decay between predetermined pressure levels when said means for directing gas from the fuel tank to said reference orifice is actuated, and means for comparing said times determined by said time determining means with predetermined time ~~values~~ RELATIONSHIPS THROUGH ANY LEAKS WHICH MIGHT EXIST IN THE FUEL TANK THROUGH THE COMBINATION OF ANY LEAKS WHICH MIGHT EXIST IN THE FUEL TANK AND SAID REFERENCE ORIFICE.

9. (Amended) A method for testing a fuel tank comprising the steps of:

a) Pressurizing the fuel tank by utilizing an external source of pressure;

b) Allowing ~~gas~~ PRESSURE within the fuel tank to stabilize at a predetermined first pressure;

c) Actuating a timer when said pressure within the fuel tank has stabilized at said predetermined first pressure;

d) Allowing gas from the fuel tank to decay until a predetermined second pressure has been reached;

e) Storing the elapsed time on the timer; and

f) Comparing said elapsed time on the timer with a predetermined time for said pressure decay to determine whether the fuel tank has an acceptable leakage rate.

{THROUGH ANY LEAKS WHICH MIGHT EXIST IN THE FUEL TANK

10. (Amended) The method as defined in claim 9 further including, after step f, the following steps:

g) Repressurizing the fuel tank by utilizing an external source of pressure;

h) Allowing ~~gas~~ PRESSURE within the fuel tank to stabilize at said predetermined first pressure;

i) Actuating said timer when said pressure within the fuel tank has stabilized at said predetermined first pressure;

THE COMBINATION OF ANY LEAKS WHICH MIGHT EXIST IN THE FUEL TANK AND A

j) Allowing gas from the fuel tank to pass through ~~said~~ reference orifice until a predetermined third pressure has been reached;

k) Storing the elapsed time on the timer and stopping gas flow through said reference orifice;

l) Repressurizing the fuel tank by utilizing ~~an~~ THE external source of pressure;

m) Allowing ~~gas~~ PRESSURE within the fuel tank to stabilize at said predetermined first pressure;

n) Actuating said timer when said pressure within the fuel tank has stabilized at said predetermined first pressure;

THROUGH ANY LEAKS WHICH MIGHT EXIST IN THE FUEL TANK

o) Allowing gas from the fuel tank to decay until said predetermined third pressure has been reached;

p) Storing the elapsed time on the timer; and

q) Comparing the ratio of the stored time in step p) with the stored time in step k) against a predetermined standard ratio to determine whether the fuel tank under test has an acceptable leakage rate.